

Notice of Allowability

Application No.

09/929,147

Applicant(s)

KUEHNEL, ANDREAS H.

Examiner

Cam Y T. Truong

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/24/2006.
2. ☒ The allowed claim(s) is/are 1-8,10-13,15-17,19,22-24,26,29-31,33,36-38,40,43-45,47,50-52, 54 and 57.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Cam Y Truong
Primary Examiner
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DETAILED ACTION

1. Applicant has amended claims 1, 10, 15, 22, 29, 36, 43 and 50 in the amendment filed on 4/24/2006.

Claims 1-8, 10-13, 15-17, 19, 22-24, 26, 29-31, 33, 36-38, 40, 43-45, 47, 50-52, 54 and 57 are pending in this Office Action.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jonathan M. Harris on 6/1/6/2006.

In claims:

Please replace claims 1, 10, 15, 22, 29, 36, 43 and 50 with amended claims 1, 10, 15, 22, 29, 36, 43 and 50.

1. (Currently amended) An apparatus for use in managing objects, the apparatus comprising:
a plurality of clusters, each cluster comprising a plurality of objects;

memory storing a first data structure indicating a state of the objects;

said memory storing a second data structure indicating the state of the clusters;

a counter indicative of a number of sets of adjacent bits that are set in words of the second data structure, wherein a second data structure bit being set indicates that one or more clusters of objects associated with said bit are free for storage of data, and wherein each word comprises a plurality of bits;

said memory further storing at least one data structure containing information extracted from the counter to manage the objects; and

said at least one data structure containing information indicating that:

the second data structure contains clusters of at least four adjacent free bits;

the second data structure is not empty, but contains no clusters of four adjacent free bits; or

the second data structure is empty, but allocation bitmap still shows free pages;

wherein said apparatus indicates a cluster of objects is free if a bit is set and said cluster of objects is not free if the bit is cleared.

10. (Currently amended) An apparatus for use in managing clusters, the apparatus comprising:

a plurality of files;

a plurality of clusters populating each file, each cluster comprising a plurality of slots;

memory storing an allocation bitmap indicating a state of the slots;

said memory storing a directory bitmap indicating the state of the clusters;

a usage counter indicative of a number of sets of adjacent bits that are set in words of the directory bitmap, a bit in the directory bitmap being set to indicate whether a cluster associated with said bit is free, wherein each word comprises a plurality of bits; and

at least one data structure containing information indicating that:

the directory bitmap contains clusters of at least four adjacent free bits;

the directory bitmap is not empty, but contains no clusters of four adjacent free bits; or

the directory bitmap is empty, but the allocation bitmap still shows free pages;

wherein said apparatus indicates a cluster of objects is free if a bit in the directory bitmap is set and said cluster of objects is not free if the bit is cleared.

15. Currently amended) A computer implemented method for managing a plurality of clustered objects, the method comprising:

tracking a state for each of a plurality of objects in a first data structure;

tracking states of clusters of object in a second data structure;

consulting at least one of the first and second data structures to manage objects;

consulting at least one usage counter to manage the objects, the at least one usage counter indicates how many sets of adjacent bits are set in words of the second data structure, wherein each word comprises a plurality of bits associated with an implementation specific wordlength;

adjusting a bit in the second data structure being set to indicate whether a cluster of objects associated with said bit is free or in use;

indicating a cluster of objects is free if the bit is set or in use if the bit is cleared;

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consulting at least one list containing information extracted from usage counters to manage the objects;

managing the objects using the extracted information in the at least one list;

wherein consulting the at least one list includes consulting a list selected from a group consisting of:

a first containing information indicating whether the second data structure contains clusters of at least four adjacent free bits;

a second list containing information indicating whether the second data structure is not empty, but contains no clusters of four adjacent free bits; and

a third list containing information indicating whether the second data structure is empty, but allocation bitmap still shows free objects.

22. (Currently amended) A computer-readable program storage medium encoded with instructions that, when executed by a computing device, perform a method for managing a plurality of clustered objects in a container, the method comprising:

tracking a state for each of a plurality of objects populating a container in a first data structure;

setting bits in a second data structure to indicate whether objects associated with each bit are free or in use;

indicating: objects are free if a bit in a bitmap is set and said objects are not free if the bit is cleared;

tracking states of clusters of objects in the second data structure;

consulting at least one of the first and second data structures to manage the objects;

consulting at least one usage counter that indicates how many sets of adjacent bits are set in words of the second data structure to indicate that associated objects are free for storing data; and

consulting at least one list containing information extracted from usage counters to manage the objects, wherein each word comprises a plurality of electronic bits, wherein consulting the at least one list in encoded method includes consulting a list selected from a group consisting of:

a first list containing information indicating whether the second data structure contains clusters of at least four adjacent free bits;

a second list containing information indicating whether the second data structure is not empty, but contains no clusters of four adjacent free bits;

and a third list containing information indicating whether the second data structure is empty, but the allocation bitmap still shows free objects.

29. (Currently amended) A computing device programmed to perform a computer-implemented method for managing a plurality of clustered objects in a container, the method comprising:

tracking a state for each of a plurality of objects populating a container in a first data structure;

setting bits in a second data structure to indicate whether objects associated with each bit are free or in use;

indicating an object is free if a bit in bitmap is set and said object is not free if the bit is cleared;

tracking states of clusters of objects in the second data structure;

consulting at least one of the first and second data structures to manage the objects;

consulting at least one usage counter that indicates how many sets of adjacent bits are set in words of the second data structure, a set bit in the second data structure indicating that an associated cluster of objects is free for storing data, wherein the words each have a wordlength based on a maximum number of bits handled by a processor that executes an operating system; and

consulting at least one list containing information extracted from usage counters to manage the objects;

wherein consulting the at least one list in a programmed method includes consulting a list selected from a group consisting of:

a first list containing information indicating whether the second data structure contains clusters of at least four adjacent free bits;

a second list containing information indicating whether the second data structure is not empty, but contains no clusters of four adjacent free bits; and

a third list containing information indicating whether the second data structure is empty, but allocation bitmap still shows free objects.

36. (Currently amended) A computer implemented method for managing a plurality of clustered slots in a file, the method comprising:

tracking a state for each of a plurality of slots populating a file in an allocation data structure;

tracking states of clusters of objects in a directory data structure;

consulting at least one of the allocation and directory data structures to manage the slots;

consulting at least one usage counter that indicates how many sets of adjacent binary bits are set in words of the directory structure thereby indicating which clusters of objects are free for storing data; and

consulting at least one list containing information extracted from usage counters to manage the slots, wherein managing the plurality of clustered slots by consulting the at least one list includes consulting a list selected from a group consisting of:

a first list containing information indicating that the directory data structure for files in this list contains clusters of at least four adjacent free bits;

a second list containing information indicating that the directory data structure for files in this list is not empty, but contains no clusters of four adjacent free bits;

and a third list containing information indicating that the directory data structure for files in this list is empty, but allocation bitmap still shows free slots.

43. (Currently amended) A computer-readable program storage medium encoded with instructions that, when executed by a computing device, perform a method for managing a plurality of clustered slots in a file, the method comprising:

tracking a state for each of a plurality of slots populating a file in an allocation data structure;

tracking states of clusters of objects in a directory data structure;

setting bits in at least one of the allocation and directory data structures to indicate whether a corresponding slot is free or in use;

indicating: said corresponding slot is free if a bit of the setting bits is set and said corresponding slot is in use if the bit of the setting bit is cleared;

consulting at least one of the allocation and directory data structures to manage the slots;

consulting at least one usage counter that indicates how many adjacent clusters are available for storing data;

consulting at least one list containing information extracted from usage counters to manage the slots, wherein consulting the at least one list in encoded method includes consulting a list selected from a group consisting of:

a first list containing information indicating whether the directory data structure contains clusters of at least four adjacent free bits;

a second list containing information indicating whether the directory data structure is not empty, but contains no clusters of four adjacent free bits; and

a third list containing information indicating whether the directory data structure is empty, but allocation bitmap still shows free slots.

50. (Currently amended) A computing device programmed to perform a method for managing a plurality of clustered slots in a file, the method comprising:

a computing device tracking a state for each of a plurality of slots populating a file in a allocation data structure;

the computing device tracking states of clusters of objects in a directory data structure;
the computing device consulting at least one of the allocation and directory data structures to manage the slots and the computing device consulting at least one usage counter that indicates how many sets of adjacent bits are set in words of the directory data structure thereby indicating which clusters are free for storing data; and

the computing device consulting at least one list containing information extracted from usage counters to manage the slots;

wherein the computing device manages the slots by consulting the at least one list in programmed method includes the computing device consulting a list selected from a group consisting of:

a first list containing information indicating whether the directory data structure contains clusters of at least four adjacent free bits;

a second list containing information indicating whether the directory data structure is not empty, but contains no clusters of four adjacent free bits;

and a third list containing information indicating whether the directory data structure is empty, but allocation bitmap still shows free slots.

Allowable Subject Matter

3. Claims 1-8, 10-13, 15-17, 19, 22-24, 26, 29-31, 33, 36-38, 40, 43-45, 47, 50-52, 54 and 57 are allowed.

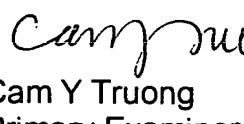
Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam Y T. Truong whose telephone number is (571) 272-4042.

The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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